A new anabolic compound, LLP2A-Ale, reserves periodontal bone loss in mice through augmentation of bone formation.

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Public Summary:
BACKGROUND: Currently, there are no effective medications to reverse periodontal disease (PD)-induced bone loss. The objective of this study was to test a new anabolic compound, LLP2A-Ale, or with the combination treatment of mesenchymal stromal cell (MSC), in the treatment of bone loss secondary to PD. METHODS: PD was induced in mice by placing a ligature around the second right molar. At one week after disease induction, the mice were treated with placebo, LLP2A-Ale, MSCs, or combination of LLP2A-Ale + MSCs, and euthanized at week 4. RESULTS: We found that PD induced alveolar bone loss that was associated with reduced bone formation. LLP2A-Ale alone or in combination with MSCs sustained alveolar bone formation and reversed alveolar bone loss. Additionally, PD alone caused systemic inflammation and increased the circulating levels of G-CSF, IP-10, MIP-1a, and MIP2, which were suppressed by LLP2A-Ale +/- MSCs. LLP2A-Ale +/- MSCs increased bone formation at the peripheral skeletal site (distal femur), which was otherwise suppressed by PD. CONCLUSION: Our findings indicated that LLP2A-Ale treatment rescued alveolar bone loss caused by PD, primarily by increasing bone formation. LLP2A-Ale also attenuated the circulating levels of a series of inflammatory cytokines and reversed the PD-induced suppression of systemic bone formation.

Scientific Abstract:
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